USSR UDC 636.083.37

KARANFILOV, N. I., Chairman of Kolkhoz imeni M. V. Frunze, Ovidiopol'skiy Rayon, Odesskaya Oblast, Honored Veterinarian, Ukrainian SSR, FAYTEL'BERG, R. O., Doctor of Medical Sciences, TKACHENKO, G. P., Candidate of Biological Sciences, Senior Scientific Associate, Odessa State University imeni M. I. Mechnikov, MEDVEDEVA, Ye. I., Doctor of Biological Sciences, PANCHENKO, K. A., PETRENKO, Ye. V., LUKINA, G. D., Senior Engineers, BOYKO, L. I., and SELICH, Ye. F., Engineers, Odessa Technological Institute of the Food Industry imeni M. V. Lomonosov

"The Effect of a Preparation Obtained From Algae (Phyllophora) Upon the Weight Gains and Blood Composition of Calves"

Moscow, Zhivotnovodstvo, No 3, Mar 72, pp 82-83

Abstract: A valuable preparation containing amino acids and peptides has been developed from industrial Phyllophora waste by the Odessa Technological Institute of the Food Industry (Author's Certificate No 287959). Employed as a fodder supplement, 4.5 kg of the preparation yield an incremental weight gain of 11.43 kg, in other words, 2.54 kg of meat for each kilogram of the preparation, which costs less than 30 kopeks. The erythrocyte number of the calves increases, as does the hemoglobin content and the total protein content. Additional testing is recommended.

USSR

UDC: 621.317.335:621.317.374

BOYKO, L. M.

"Investigation of Paraelectric Films on Superhigh Frequencies"

Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmereniyam. T. 1 (Reports of the All-Union Scientific and Technical Conference on Radio Engineering Measurements. Vol. 1), Novosibirsk, 1970, pp 80-82 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12A350)

Translation: The author describes a method of measuring the relative permittivity and loss tangent of nonlinear thin-film capacitors; the method is based on excitation of a thin-film resonator in the cavity of a high-Q metal resonator; as the measurements are made, the thin-film resonator is retuned by some method (for instance by changing temperature) to bring its resonance frequency to that of the metal resonator. Resonance matching is determined from the coefficient of reflection. The theory of the procedure is given. Two illustrations, bibliography of one title.
N. S.

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USSR

UDC: 621.396.673.1

BOYKO, L. P.

"Calculating the Radiation Pattern of Cylindrical Slot Type Antenae in a Plane Perpendicular to the Cylinder Axis"

Moscow, Radiotekhnika, No 7, 1970, pp 102-104

Abstract: The author presents a graphoanalytic method for the engineering calculation of the radiation pattern of a cylindrical slot type antenna. The essence of this method is the use of a known standard radiation pattern for a single narrow slot. Experimental results were obtained using this method for cylinders with an $\varkappa$ parameter of 1.5, 2, and 3 with various numbers of slots along the generatrix of the cylinder. The experimental data was verified on models and was in close agreement. The proposed method can be used in those instances where it is possible to disregard slot interaction. This can be done with relatively small cylinder radii and where the distances between slot joints are not less than one half of the wave length. The original article has five figures, two formulas, and three bibliographic entries.

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Acc. Nr. AP0048857 Abstracting Service: CHEMICAL ABST. 5-70 Ref. Code 21R0459

B

90918u **Viscometric and electron-microscopic studies of the polypyromellitimide of anilinephthalein.** Korshak, V. V.; Pavlova, S. A.; Boiko, L. V.; Babchinitser, T. M.; Vinogradova, S. V.; Vygodskii, Ya. S.; Golubeva, N. A. (Inst. Elementoorg. Soedin., Moscow, USSR). *Vysokomol. Soedin., Ser. A* 1970, 12(1), 56-62 (Russ). The hydrodynamic properties of the title polymer (I) (prepd. from pyromellitic dianhydride and anilinephthalein by a high temp. polycyclization in $PhNO_2$ or by a 2-stage procedure) were studied. Viscosity and mol. wt. measurements indicated that the reaction conditions had no effect on the structure of I. The intrinsic viscosity of I was proportional to the mol. wt. (2000–160,000). The rigid I macromols. had a linear structure and were present in soln. as assocd. globules. The dimensions of the globules (as measured by electron microscopy) were similar to those calcd. from viscometric data using the P. Debye-A. M. Bueche equation (1948). CKJR

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REEL/FRAME
19800624

1/2 013 UNCLASSIFIED PROCESSING DATE--11SEP70
TITLE--STUDY OF THE COMPOSITION OF SOLID TAR IN REACTIVE FUELS -U-

AUTHOR--ZRELOV, V.N., KALININ, L.L., BOYKO, L.V.

COUNTRY OF INFO--USSR

B

SOURCE--KHIMIIA I TEKHNOLOGIIA TOPLIV I MASEL, VOL. 15, NO 2, 1970, P. 53-56
DATE PUBLISHED-------70

SUBJECT AREAS--PROPULSION AND FUELS

TOPIC TAGS--CHEMICAL COMPOSITION, HYDROCARBON FUEL, ETHER, FUEL STORAGE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1990/2034 STEP NO--UR/0065/70/015/002/0053/0056

CIRC ACCESSION NO--AP0109966
ZZZZZZZZZZZZ UNCLASSIFIED

2/2 013 UNCLASSIFIED PROCESSING DATE--11SEP70
CIRC ACCESSION NO--AP0109966
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STUDY OF THE SOLID, INSOLUBLE TARS WHICH ARE THE END PRODUCT OF THE OXIDATION OF LOW STABLE HYDROCARBON FUELS. CHEMICAL COMPOSITION OF DEPOSITS FORMED ON THE BOTTOM OF THE STORAGE TANKS WAS DETERMINED. IT IS SHOWN THAT UNDER PROLONGED STORAGE CONDITIONS, THESE FUELS FORM AROMATIC, UNSATURATED POLYOXYETHERS.

ZZZZZZZZZZZZ UNCLASSIFIED

1/2 023 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--QUANTITY AND COMPOSITION OF THE SOLID PHASE IN FUELS AT TEMPERATURES BELOW 00DEGREES -U-

AUTHOR-(02)-ZHELDIV, V.M., NOVIKOV, I.V.

B

COUNTRY OF INFO--USSR

SOURCE--NEFTEPERERAB. NEFTEKHIM. (MOSCOW) 1970, (4), 22-3

DATE PUBLISHED-------70

SUBJECT AREAS--PROPULSION AND FUELS

TOPIC TAGS--KEROSENE, DIESEL FUEL, LOW TEMPERATURE EFFECT, CATALYTIC CRACKING, CHEMICAL COMPOSITON

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3005/1940 STEP NO--UR/0318/70/000/004/0022/0023

CIRC ACCESSION NO--AP0133784

UNCLASSIFIED

2/2 023 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0133784

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. LOW TEMP. SOLID RESIDUES OF CRACKING KEROSINES CONTAINED ICE CRYSTALS AND HIGH CRYSTG. PRODUCTS C SUB11 DIENE HYDROCARBON OXIDN. THE RESINOUS COMPONENTS WERE OBTAINED BY POLYMG. THE OXIDN. PRODUCTS OF TETRA AND PENTACYCLIC AROMATIC HYDROCARBONS. THE DIESEL FUEL RESIDUES CONTAINED ICE CRYSTALS AND HIGH CRYSTG. N,ALKANES. THE RESIDUES CONTAINED INSIGNIFICANT AMTS. OF SOLID IMPURITIES AND RESINOUS COMPDS.

UNCLASSIFIED

USSR

UDC 612.743+612.744

BOYKO, M. I., Department of Physiology, Institute of Physical Culture imeni P. F. Lesgaft, and Laboratory of the Physiology of Movement, Institute of Physiology imeni I. P. Pavlov, Academy of Sciences USSR, Leningrad

"Features of Muscle Biopotential During Work to Complete Fatigue"

Leningrad, Fiziologicheskiy Zhurnal SSSR imeni I. M. Sechenov, Vol 59, No 9, Sep 73, pp 1377-1384

Abstract: The biopotentials of the leg muscles of 15 healthy males who stood on one leg until complete fatigue were measured. After an initial increase in electrical activity, portions with decreased activity were observed in the electromicrograph. Subsequently periods of silence were registered, attaining a length of up to 50 msec at the end of the experiment. This phenomenon was labeled the "fatigue tremor," and was observed close to the time limit of ability to maintain the position. An increase in the amplitude of oscillation of transverse muscle rigidity was also noted. The frequency of the "fatigue tremor" was the same for all muscles connected to the same joint but different for others. The observations are said to confirm the role of the peripheral nervous system in producing tremor, but also to indicate a supraspinal influence, and perhaps the importance of the changing mechanical properties

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BOYKO, M. I., Fiziologicheskiy Zhurnal SSSR imeni I. M. Sechenov, Vol 59, No 9, Sep 73, pp 1377-1384

of the muscle. Reverse afferentation from the Golgi receptors may also be involved in the formation of silence periods, which were not observed with the joints fixed.

RAN / / [illegible] / [illegible] 73

[illegible] 1972 10

temperature front attenuates exponentially with time and does not affect the stress wave motion. After passage of the electromagnetic front, a field of quasi-static stresses is established.

BOYKO, M.M.

Boyko, M. M., V. A. Lelyakov and V. S. Solov'yev. Experimental investigation of shock wave attenuation in steel. ZhPMTF, no. 2, 1972, [illegible]

Shock wave attenuation in steel specimens from the contact blast of a plane-wave tetryl charge, with a flyer plate diameter and 10 mm height, was studied experimentally. Monotonic attenuation of the maximum shock-compression pressure was observed at increasing distances from the contact surface. Shock wave attenuation was caused by a relief wave which overtook the shock wave from the direction of the charge. The propagation rates of the primary and secondary shock waves were computed using the known shock-wave velocity and the experimentally obtained time intervals between the emergence of the waves to the free surface of variable thickness plates. The experiments show that up to a thickness of $x_1/h_{el}.35$ (x_1, specimen thickness; h, charge height) the shock waves propagated in steel in three rays, and thereafter degenerated into a two-stage form.

Zak, M. A. Geometric shock waves in an anisotropic elastic body. MTT, no. 3, 1972, 161-162.

An investigation is made of a quasi-linear hyperbolic system of equations for wave propagation in an elastic anisotropic medium. Surface wave front equations of motion are derived and

USSR

UDC 576.8.095:622.323

GOL'DENBERG, A. M., KVASNYKOV, YE. I., BOYKO, H. M., LYUBOMYROVA, O. H., PAVLENKO, M. I., PYSARCHUK, YE. M., and KHYZHNYAK, O. O., Ivano-Frankovsk Central Scientific Research Laboratory, and Institute of Microbiology and Virology, Academy of Sciences UkrSSR

"Biochemical Processes During Oil Displacement Under the Influence of Bacteria in Model Experiments"

Kiev, Mikrobiologicheskiy Zhurnal, Vol 33, No 2, Mar/Apr 71, pp 234-239

Abstract: Introduction of selected cultures of gas-forming bacteria from the genus Clostridium together with a molasses medium into an artificial model of an oil-bearing bed (sand saturated with oil) results in higher displacement of oil as compared to the control (without addition of bacteria). Most crucial changes in the medium enriched with bacteria occur in 5-7 days at an optimum temperature of 30°C, that is during the period of most intensive changes in the nutrient medium and maximum gas production. At that time the surface tension at the interphase culture medium-air is lowered, the amount of organic acids and ethanol is increased and the pH of the medium is lowered. The specific gravity of the oil exposed to bacteria is lowered by 0.0018-0.0096 g/cm^3, and its viscosity is lowered by 0.51-3.02 cst, without any changes in its fractional composition.

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1/2 011 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--PECULIARITIES OF PLACING AND QUANTITY OF SOME PREDATORY MAMMALS OF THE MIDDLE DNIEPER AREA -U-

AUTHOR-(02)-BCYKO, N.YA., SAMARKIY, S.L.

B

COUNTRY OF INFO--USSR

SOURCE--VESTNIK ZOOLOGII, 1970, NR 3, PP 14-20

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--MAMMAL, POPULATION LEVEL, GEOGRAPHIC LOCATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3001/0423 STEP NO--UR/0575/70/000/003/0014/0020

CIRC ACCESSION NO--AP0126176

UNCLASSIFIED

2/2 011 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0126176

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PECULIARITIES OF PLACING AND QUANTITY OF PREDATORY MAMMALS WERE INVESTIGATED AT THE THERRITORY OF THE MIDDLE DNIEPER AREA. IT WAS ESTABLISHED THAT QUANTITY AND DENSITY OF POPULATIONS OF PREDATORY MAMMALS IS DETERMINED BY THE PRESENCE OF OPTIMAL PROTECTING CONDITIONS, STABLE FOOD RESERVE AND DEGREE OF HUNTING. VULPES VULPES, MARTES FONIA, MUSTELLA PUTORIUS AND OTHER ANIMALS ACCOMODATED TO THE EXISTENCE IN CULTURAL LANDSCAPE. THEY FIND HERE SHELTERS AND A SUFFICIENT AMOUNT OF FOOD. MELES MELES, MARTES MARTES AND MUSTELLA EVERSMANNI AS A RESULT OF DETERIORATION OF PROTECTING CONDITIONS AND INTENSIVE HUNTING ARE MET RARELY AT THE INVESTIGATED TERRITORY AND REQUIRE A STRICT PROTECTION.

FACILITY: THE PEDAGOGICAL INSTITUTE, CHERKASSY.

UNCLASSIFIED

Powder Metallurgy

USSR

UDC 621.762.001.4

BOYKO, P. A., and SHCHERBAN', N. I., Kiev Polytechnical Institute

"Compaction of Nickel-Carbide Compositions"

Kiev, Poroshkovaya Metallurgiya, No 10, Oct 70, pp 23-26

Abstract: Strengthening of metals with finely dispersed particles has been in recent years the topic of a number of both theoretical and experimental studies. Since dispersion-strengthened alloys are produced by pressing the powders with subsequent sintering and extrusion of the bars, it has been of interest to investigate the compaction of the composite powders. This study concerns the compactability of nickel powders (Ni-ZrC, Ni-NbC, Ni-WC) containing 0.1-16 vol.% of zirconium, niobium, and tungsten carbides as compared to that of pure nickel powder. Figures in the original article show the dependence of the density of compacts on compacting pressure, the properties of disperse nickel powders and nickel-carbide compositions, and the porosity of compacts versus compacting pressure. It has been shown that the addition of carbides decreases the density of the compacts while it increases their porosity. The relationship between the density of compacts, compacting pressure, and carbide contents is identical to that of iron-glass compositions.

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USSR UDC 620.018

SAMSONOV, G. V., BOYKO, P. A., MOTYAZHEV, V. I., BONDARENKO, V. P., and SLEPTSOV, V. M., Kiev

"Solubility and Solid Phase Reaction of Carbides of Transition Metals With Nickel and Copper"

Moscow, Fizika i Khimiya Obrabotki Metallov, No 1, Jan-Feb 71, pp 112-119

Abstract: The solubility and solid phase reactions of carbides of Ti, Zr, Hf, V, Nb, Ta, Cr, Mo, and W with Ni and Cu were investigated by X-ray graphic, X-ray microspectral, and metallographic analytical methods. It was found that the solubility and the width of the diffusion band in reactions of these carbides with nickel increase with the transition of carbides of group IV metals to group VI metals and are practically absent in the case of copper. The results are discussed from the standpoint of a model of a contour localization of valent electrons in atoms of reacting components. It is demonstrated that carbides of transition metals are effective hardeners of copper and less effective hardeners of nickel in dispersion-hardened composite materials.

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USSR

BOYKO, P. B., IVANOV, A. P.

"Effect of Polarization Properties of External Radiation on the Energy Characteristics of Light Reflected by a Turbid Medium"

Minsk, Zhurnal Prikladnoy Spektroskopii, February 1970, pp 358-361

Abstract: The effect of polarization properties of external radiation on the coefficients of diffused reflection R and the brightness ρ of light scattered by a medium was studied experimentally.

A wide range of incidence and scattering angles for various probabilities of the survival of a photon from the reflected object, in this case a layer of Mark FS-6 glass powder, was considered.

Results of the experiment give evidence that a difference exists between values of the energy characteristics obtained in the illumination of a medium by light polarized in the incidence plane and perpendicular to it, such that in the latter case the values of R and ρ are higher, as a rule. Rotation of the electrical vector in the direction of the incident light beam was found

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APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002200430007-3"

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BOYKO, P. B., IVANOV, A. P., Zhurnal Prikladnoy Spektroskopii, February 1970, pp 358-361

to be stronger the greater the absorption of the medium and the steeper the angle of incidence.

The data obtained can be used for the analysis of R and ρ in the radiation of a medium by light having an arbitrary degree of polarization.

The article includes 2 illustrations. There are 6 references.

1/2 027 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--EFFECT OF POLARIZATION PROPERTIES OF EXTERNAL RADIATION ON THE ENERGY CHARACTERISTICS OF LIGHT REFLECTED BY A TURBID MEDIUM -U-

AUTHOR-(02)-BOYKO, P.B., IVANOV, A.P.

B

COUNTRY OF INFO--USSR

SOURCE--MINSK, ZHURNAL PRIKLADNOY SPEKTROSKOPII, FEBRUARY 1970, PP 358-361

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--LIGHT POLARIZATION, LIGHT REFLECTION, LIGHT SCATTERING, POWDERED GLASS, ENERGY SPECTRUM, ELECTRIC FIELD, LIGHT TRANSMISSION/(U)MARK FS6 GLASS POWDER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1409 STEP NO--UR/0368/70/000/000/0358/0361

CIRC ACCESSION NO--AP0125049

UNCLASSIFIED

2/2 027 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0125049

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF POLARIZATION PROPERTIES OF EXTERNAL RADIATION ON THE COEFFICIENTS OF DIFFUSED REFLECTION R AND THE BRIGHTNESS RHO OF LIGHT SCATTERED BY A MEDIUM WAS STUDIED EXPERIMENTALLY. A WIDE RANGE OF INCIDENCE AND SCATTERING ANGLES FOR VARIOUS PROBABILITIES OF THE SURVIVAL OF A PHOTON FROM THE REFLECTED OBJECT, IN THIS CASE A LAYER OF MARK FS-6 GLASS POWDER, WAS CONSIDERED. RESULTS OF THE EXPERIMENT GIVE EVIDENCE THAT A DIFFERENCE EXISTS BETWEEN VALUES OF THE ENERGY CHARACTERISTICS OBTAINED IN THE ILLUMINATION OF A MEDIUM BY LIGHT POLARIZED IN THE INCIDENCE PLANE AND PERPENDICULAR TO IT, SUCH THAT IN THE LATTER CASE THE VALUES OF R AND RHO ARE HIGHER, AS A RULE. ROTATION OF THE ELECTRICAL VECTOR IN THE DIRECTION OF THE INCIDENT LIGHT BEAM WAS FOUND TO BE STRONGER THE GREATER THE ABSORPTION OF THE MEDIUM AND THE STEEPER THE ANGLE OF INCIDENCE. THE DATA OBTAINED CAN BE USED FOR THE ANALYSIS OF R AND RHO IN THE RADIATION OF A MEDIUM BY LIGHT HAVING AN ARBITRARY DEGREE OF POLARIZATION.

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APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002200430007-3"

USSR UDC 547.963.3

BOYKOV, P. YA., and GUMANOV, L. L., Institute of Chemical Physics, USSR Academy of Sciences, Moscow

"Interaction Between T4B Bacteriophage DNA and Cell Membrane Structures"

Moscow, Molekulyarnaya Biologiya, Vol 5, No 3, May/Jun 71, pp 409-414

Abstract: The interaction of T4B bacteriophage DNA with cell membrance structures of E. coli B during intracellular development of the phages as well as the ability of phage DNA to form bonds with membrane structures in vitro was studied. Six minutes after phage DNA molecules penetrate the cell, they become attached to the cytoplasmic membrane. Then the DNA is duplicated, and finally the parent DNA is set free. The cytoplasmic membrane of one cell can bind approximately 20-25 T4B DNA molecules. Formation of bonds between DNA and the cytoplasmic membrane in vitro requires the presence of some soluble intracellular proteins in the culture medium.

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USSR

BOYKO, R. V.

"Asymptotic Analysis of Distributions of One Functional of a Simple Symmetrical Random Walk"

Teoriya Veroyatnostey i mat. Stat. Mezhved. Nauch. sb. [Theory of Probabilities and Mathematical Statistics, Interdepartmental Scientific Collection], 1972, No 7, pp 3-13 (Translated from Referativnyy Zhurnal, Kibernetika, No 1, 1973, Abstract No 3 V40 by the author).

Translation: A study is made of the functional

$$\eta_{n,x} = \sum_{k=0}^{n} f(S_k + x),$$

where $S_0 = 0$, $S_k = \xi_1 + \ldots + \xi_k$, ξ_k are independent, identically distributed random quantities, taking on values of ± 1 with probability 1/2, x is an integer, f(x) is an integer finite function, defined at integer points; $f(k) = f_k$ where $k = \overline{1, N}$ and $f(k) = 0$ where $k \neq \overline{1, N}$, where

$$\sum_{k=1}^{N} f_k = c \neq 0.$$

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USSR

BOYKO, R. V., Teoriya Veroyatnostey i mat. Stat. Mezhved. Nauch. sb., 1972, No 7, pp 3-13.

An asymptotic expansion of the distribution $P\{n_{n,x} = k\}$ is constructed where $k = O(n^{1/2})$ with respect to powers of $1/\sqrt{n}$; two terms of the asymptote are written in explicit form.

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USSR

B

24

ADO, YU. M., ZHURAVLEV, A. A., LOGUNOV, A. A., MYAE, E. A., NAUMOV, A. A., PISAREVSKIY, V. YE., ROGOZINSKIY, V. G., TUSHABRAMISHVILI, K. Z., SHUKEYLO, I. A., BOYKO, S. N., KOMAR, YE. G., MALYSHEV, I. F., MOZIN, I. V., MONOSZON, N. A., MOZALEVSKIY, I. A., SPEVAKOVA, F. M., STOLOV, A. M., TITOV, V. A., VODOP'YANOV, F. A., KUZ'MIN, A. A., KUZ'MIN, V. F., MINTS, A. L., RUBCHINSKIY, S. M., UVAROV, V. A., GUTNER, B. M., ZALMANZON, V. B., PROKOP'YEV, A. I., and TEMKIN, A. S.

"Some Results of the Overall Adjustment and Start-up of the 70-Gev Proton Synchrotron of the Institute of High-energy Physics"

Moscow, Atomnaya Energiya, Vol 28, No 2, Feb 70, pp 132-138

Abstract: The physical part of the plan for the 70-Gev proton synchrotron was executed by the Institute of Theoretical and Experimental Physics. The electromagnet with feed system, the vacuum chamber, and the injection devices were developed at the Scientific Research Institute of Electrophysical Apparatus imeni D. V. Yefremov. The radioelectronic systems for acceleration process control and generation of

USSR

ADO, YU. M., et al., Atomnaya Energiya, Vol 28, No 2, Feb 70, pp 132-138

the accelerating field, as well as the radiotechnical measurement and beam observation systems, were developed by the Radiotechnical Institute of the Academy of Sciences USSR. "Tyazhpromelektroproyekt" [State Planning Institute for the Planning of Electrical Equipment for Heavy Industry] designed the general-purpose electrotechnical devices and cable connections. The plan for the construction complex of the accelerator was developed by the State All-Union Planning Institute. The construction of the accelerator was under the general supervision of the State Committee for the Use of Atomic Energy USSR. The adjustment of individual systems and the overall adjustment and start-up of the accelerator were carried out by the Institute of High-energy Physics and the developers of the accelerator systems. The basic beam work was done by the Institute of High-energy Physics with the participation of the Radiotechnical Institute. The construction of the accelerator was begun in 1960, and all the basic construction and assembly work was completed at the beginning of

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USSR

ADO, YU. M., et al., Atomnaya Energiya, Vol 28, No 2, Feb 70, pp 132-138

1967. At the initial stage of construction, before the formation of the Institute of High-energy Physics in 1963, the work was coordinated by the Institute of Theoretical and Experimental Physics. The linear accelerator injector was started on 28 July 1967, the operation of the individual systems was adjusted by September 1967, and the physical start-up of the accelerator was accomplished on 14 October.

A description is given of the work done to adjust the annular electromagnet (including the electromagnet cooling and feed systems), the injection system (consisting of matching channel and injection device), the vacuum system, the radioelectronic system (including the accelerating field generation system, the acceleration process control system, and the radiotechnical measurement system), and the beam observation system (which provides for beam observation in the first revolution and during acceleration). In the physical start-up of the accelerator the main efforts were directed towards obtaining accelerated protons of the planned energy, and the problem of obtaining high

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USSR

ADO, YU. M., et al., Atomnaya Energiya, Vol 28, No 2, Feb 70, pp 132-138

intensity of the accelerated proton was not raised.

The article gives a listing of the principal parameters of the proton synchrotron, as well as a schedule of the individual stages of the start-up of the accelerator. Photographs include a view of the part of the ring hall in the beam injection area and a general view of the hall of ignitron rectifiers.

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USSR

UDC 621.983

OVCHINNIKOV, A. G., BOYKO, E. I., BOYKO, S. V.

"Study of Cold Heading with Ultrasound"

Izvestiya Vysshikh Uchebnykh Zavedeniy, Mashinostroyeniye, No 3, 1973, pp 127-129.

Abstract: The problem of the use of ultrasound as an activating factor during cold heading is studied. It is demonstrated that the use of ultrasound increases the ductility of the material and reduces the static deformation force required. Also, the use of ultrasound facilitates softening of the material and decreases residual stresses.

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JPRS 59368
6-73

XIV-3. EFFECT OF CRYSTALLIZATION CONDITIONS ON THE MORPHOLOGY OF EPITAXIAL LAYERS OF SILICON

[Article by S. R. Boyko, V. P. Tashkudenko, V. V. Kharchenko, Tashkent; Novosibirsk, III Simpozium po Protsessam Rosta i Sinteza Poluprovodnikovykh Kristallov i Plenok, Russian, 12-17 June 1972, p 195]

The epitaxial layers of silicon were obtained by the method of reducing $SiCl_4$ in an atmosphere of pure hydrogen in a broad growth temperature range (1,000-1,310° C) and $SiCl_4$ concentration range in the gas phase (0.1-10 percent by volume). The basic morphological characteristics of the surface of these layers are as follows: the regions of retarded growth -- holes and regions of accelerated growth -- pyramids and tripyramids, presence of certain types of microdefects, their density, their magnitude and crystallographic facing essentially depends on the crystallization conditions. Decreasing the $SiCl_4$ concentration with respect to effect on the morphology of the layers is equivalent to increasing the crystallization temperature and leads to a decrease in the defect density of all types. On the basis of the great amount of statistical data, the conditions of the predominant occurrence of defects of different types are defined. These data are presented in the diagram. The occurrence of microdefects is connected with the mechanism of crystallization of epitaxial layers.

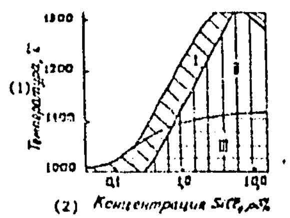

Diagram. Region of occurrence of holes, pyramids (II) and tripyramids (III)

Key: 1. temperature, °C
2. concentration of $SiCl_4$, % by volume

Boyko, S.R.

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002200430007-3"

BOYKO, S.R.

XV-2. OBTAINING TOPOGRAMS WITH PERPENDICULAR PROJECTION OF THE DEFECTS OF THE EPITAXIAL SILICON LAYERS

[Article by S. R. Boyko, Tashkent; Sovetskiye [illegible] Polupravodnikovykh Kristallov i Plenok, Kuybyshev, [illegible] 1974, p 213]

The method of x-ray diffraction topography is varied for revealing the images of the structural defects in the projection perpendicular to the surface of the epitaxial layers. The variation is based on using the reflecting planes making an angle α with the surface of the film corresponding to the condition $\alpha = \theta$ (θ is the Wolf-Bragg angle). The diffraction conditions correspond to the extinction contrast of the images of the structural defects. The input surface of the x-rays in the substrate surface or film surface, and the output surface is the perpendicular cross section of the film with the substrate. The photographic plate is installed parallel to this cross section. The [illegible] images obtained are discussed, and optimal versions of using this method are proposed.

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Acc. Nr: AP0037242 B Ref. Code: UR 0301

PRIMARY SOURCE: Voprosy Meditsinskoy Khimii, 1970, Vol 16, Nr 1, pp 83 - 87

SPLITTING OF THIAMINE PHOSPHATES IN HEART MUSCLE AT ADRENALINE-INDUCED MYOCARDITIS AND IN NORMAL ANIMALS

Boyko, S. S.; Tseytlin, L. A.

Laboratory of Biochemistry Institute of Pharmacology USSR Academy of Medical Sciences, Moscow

The splitting of exogenous TPP and TMP in homogenates of heart muscle took place. Dephosphorylation of TPP either leads to TMP or free thiamine formation. From all subcellular fractions the supernatant containing microsomes is characterized by the highest thyamine pyro- and thiamine monophosphatase activity. The enzymatic splitting of TPP and TMP is significantly increased in all cellular fractions of heart muscle homogenate at myocarditis.

D.R.

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REEL/FRAME
19730169

USSR

UDC: 621.375.82

BOYKO, V. A., KROKHIN, O. N., SKLIZKOV, G. V.

"Investigation of the Parameters and Dynamics of a Laser Plasma"

Moscow, Issledovaniye parametrov i dinamiki lazernoy plazmy. Fiz. in-t AN SSSR. Lab. kvant. radiofiz. (cf. English above. Physics Institute of the Soviet Academy of Sciences. Quantum Radiophysics Laboratory), Preprint No 121, 1972, 132 pp, ill., mimeo. (from RZh-Fizika, No 8, Aug 73, abstract No 8D1108 by E. B.)

Translation: The authors make a survey of experimental research dealing with the interaction between laser emission and the surface of a target. As a rule, the experiments described are done with sharp focusing of the beam onto a massive target. A study is made of the parameters of the hot phase of the jet: i.e., the plasma which is directly heated by the laser emission close to the surface of the target. An investigation is made of the variation of the main parameters of the plasma (temperature, density, linear dimensions, lifetime, effective charge of ions) with space and time and their relations to the characteristics of laser emission. A considerable portion of the experimental data obtained on the laser jet relate to the mode of gasdynamic motion where the density of the hot plasma is no greater than 10^{20}-10^{23}. From the standpoint

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USSR

BOYKO, V. A., et al., Issledovaniye parametrov i dinamiki lazernoy plasmy. Fiz. in-t AN SSSR Lab. kvant. radiofiz, Preprint No 121, 1972, 132 pp.

of thermonuclear applications the most promising is the mode of thermal conduction with inertial plasma containment, which is achieved with a heating pulse duration of 10^{-9} sec and flux densities of 10^{15}-10^{16} W/cm^2. The plasma thus formed has a temperature of several kev and a density of 10^{23}, which satisfy conditions of thermonuclear fusion. Possible trends in research to achieve the mode of thermal conduction are considered. Bibliography of 172 titles.

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LASERS

JPRS 61038

2 April 1974

Bible

BOYKO, V.A.

STUDY OF THE PARAMETERS AND DYNAMICS OF A LASER PLASMA

[Book by V.A. Boyko, G.S. Krokhin, and G.V. Sklizkov; Issledovaniye Parametrov i Dinamiki Lazernoy Plazmy: Preprint No 121, 1972, Order of Lenin Physics Institute imeni P.N. Lebedev Laboratory of Quantum Radiophysics, signed to press 14 September 1972, 132 pages]

1. Introduction

The problem of heating a material to thermonuclear temperatures by means of powerful thermonuclear laser emission [1] stimulated numerous studies of a plasma formed both when irradiating the surface of the condensed material in a vacuum-laser flare and for optical breakdown in the gases -- a laser spark.

In addition to the thermonuclear applications, prospective applications of a laser plasma have also arisen, such as, for example, its use as the source of multicharged ions for spectroscopic research of astrophysical interest, for acceleration equipment when studying the formation of new super-heavy elements, and so on.

The interest in a laser plasma increases as higher and higher temperatures are reached. This has become possible as a result of the rapid progress in laser engineering: in recent years, the power of lasers has increased on the average by an order a year. The peculiarity of a laser plasma is the high rate of energy generation essentially greater than in pulse units. Now the energy release power is more than 10^{13} watts, the energy density in the plasma is $\sim 10^{7}$ joules/cm^3, the specific energy release rates $\sim 10^{21}$ watts/cm^3. For comparison, let us present the corresponding figures for the most powerful devices of the "plasma focal point" type $\sim 10^{9}$ watts, $\sim 10^{3}$ joules/cm^3, $\sim 10^{11}$ watts/cm^3, and the specific energy consumption of explosives $\sim 10^{6}$ joules/cm^3.

Recently, a large number of both theoretical and experimental studies have been published on the subject of laser plasma. The experimental studies of the physical conditions existing in a laser stream can be now separated roughly provisionally into two steps. The basic result of the first step (1964-1967) is establishment of the fact of the existence of a dense and relatively hot plasma near the target surface capable of emitting ions with an energy of ~ 1 kev, the formation of severe shock waves in the atmosphere surrounding the

USSR

UDC: None

BASOV, N. G., BOYKO, V. A., ZAKHAROV, S. M., KROKHIN, O. N., MIKHAYLOV, Yu. A., SKLIZKOV, G. V., and FEDOTOV, S. I.

"Mechanisms of Neutron Generation in a Laser Plasma"

Moscow, Pis'ma v ZhETF, vol 18, No 5, 5 September 1973, pp 314-317

Abstract: This letter gives the results of experiments performed to investigate the mechanisms which give rise to neutrons in laser plasmas. The experiments here described proved that, depending on the experimental conditions, both hot and cold neutrons are produced. The measurements involved were conducted in a variant of the sharp focusing of a single-channel laser on a massive CD_2 target, as well as in spherically symmetrical irradiation of CD_2 particles measuring about 100 μ in diameter by the output of a multichannel laser. Both methods were discussed in earlier papers by the first-named author above, et al (Pis'ma v ZhETF, 13, 1971, p 691; 15, 1972, p 589; ZhETF, 62, 1972, p 203). Results of both types of measurement are separately examined. Some of these cast doubt on the assertion of previous researchers that the appearance of fast ions is connected with acceleration in the critical density region.

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USSR

BASOV, N. G., BOYKO, V. A., GRIBKOV, V. A., ZAKHAROV, S. M., KROKHIN, O. N., and SKLIZKOV, G. V., Physics Institute imeni P. N. Lebedev, Academy of Sciences USSR

"Gas Dynamics of a Laser Plasma in the Process of Heating"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 61, No 1(7), Jul 71, pp 154-161

Abstract: One of the two well-known approaches to the problem of heating plasma to thermonuclear temperatures by irradiating it with a laser is the method in which a substantial portion of the energy of the laser is converted into the energy of directed, gas-dynamic movement. In the present article, an attempt is made for the first time to measure the distribution of the density and speed of movement of the plasma, to evaluate the pressure of the plasma during the process of heating. A multimode, Q-switched laser and a carbon target were used, and measurements were made by slit scanning of an interferogram on an image converter. It was found that the maximum pressure (10^6 atmospheres) and temperature occur at the beginning of the laser pulse. At later times, the profile of the density is elevated, and the area of the 1/2

BASOV, N. G., et al., Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 61, No 1 (7), Jul 71, pp 154-161

plasma in which absorption takes place draws back from the target and increases. The mass of the gas heated directly by the laser beam also increases. The temperature in the hot portion drops, and an increasingly greater part of the radiation energy is converted directly into the kinetic energy of the disintegrating substance. In this manner, by varying the dependence of the dispersion of the radiation on time, it ispcssible to shift the maximum pressure and to achieve optimal utilization of the laser's energy when heating plasma under real conditions.

USSR

B

UDC 533.916

BASOV, N. G., Academician, BOYKO, V. A., DROZHBIN, Yu. A., ZAKHAROV, S. M., KROKHIN, O. N., SKLIZKOV, G. V., and YAKOVLEV, Y. A., Physics Institute imeni P. N. Lebedev of the Academy of Sciences USSR, Moscow

"Investigation of the Initial Stage of the Gas-Dynamic Dispersion of a Laser Jet Plasma"

Moscow, Doklady Akademii Nauk SSSR, Vol 192, No 6, 21 Jun 70, pp 1248-1250

Abstract: Since previous experiments study the radiation spectra and gas-dynamic parameters of a plasma in large time intervals exceeding the length of the laser pulse, the present study covers the dynamics of the motion and the kinetics of ionization processes in a laser plasma with a high time resolution. It is noted that the gas-dynamic motion of a plasma accompanying the high-temperature heating of condensed material with focused laser radiation has been investigated because of the importance of the possible use of a laser plasma for thermonuclear fusion, as a source of multicharged ions for spectroscopic studies of astrophysical interest, for accelerator technology, etc. The study of the dispersion of a plasma during the action of a laser pulse and at distances r from the surface of the target comparable with the diameter d of the focusing spot of the laser radiation made it possible to trace different phases of the motion of the material,

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BASOV, N. G., et al, Doklady Akademii Nauk SSSR, Vol 192, No 6, 21 Jun 70, pp 1248-1250

including the initial stage of heating and the "freezing" of the ionization state of the plasma. The radiation of a neodymium laser with an energy of 10 j and a half-length of 15 nsec was focused with a 5-cm lens on the surface of a carbon target in a vacuum of 10^{-6} torr, and the structure of the dispersing plasma was investigated on the basis of its luminosity. Space-time diagrams of ion dispersion were obtained from analysis of the data (see Fig.); for $r \leq 1$ mm the plasma emits a continuous spectrum in the visible region (lines are observed only at distances $r \geq 1$ mm). As the distance increases to 10 mm, a break is observed in the luminosity of ions CVI and CV from the target. The regions occupied by ions of different charges partially intersect, although there are no discontinuities in the density of material in the plasma. The following model of the gas-dynamic motion of the heated matter is constructed from an analysis of the experimental data: The plasma moves from the region of heating ($r < d$), where the electron temperature $T_e \sim 120$ ev on the basis of measurements of the recombination x-radiation, into the vacuum perpendicular to the surface with a velocity $u \sim 6 \cdot 10^6$ cm/sec. In this region the velocity of the plasma is close to the speed of sound and the ion temperature corresponding to this

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BASOV, N. G., et al, Doklady Akademii Nauk SSSR, Vol 192, No 6, 21 Jun 70, pp 1248-1250

velocity is ~125 ev. A considerable acceleration of the plasma is observed at distances $r \leq 1$ mm. The velocity here is several times greater than the initial. The effect of "freezing" is obtained, since the density drops as $u^{-1}r^{-2}$ along the trajectory of the ion and the recombination time becomes much greater than the characteristic dispersion time. In one process the freezing of the maximum degree of ionization occurs several nanoseconds after the beginning of the motion of the "elementary volume" of the plasma. This freezing process also occurs for the remaining ions. The laminar structure of the jet which is observed in photographs is explained on this basis. The energy lost by the plasma contained in the region $r < d$ to radiation in the range 20-100 Å over a time of 40 nsec is estimated to be about 0.5 joule.

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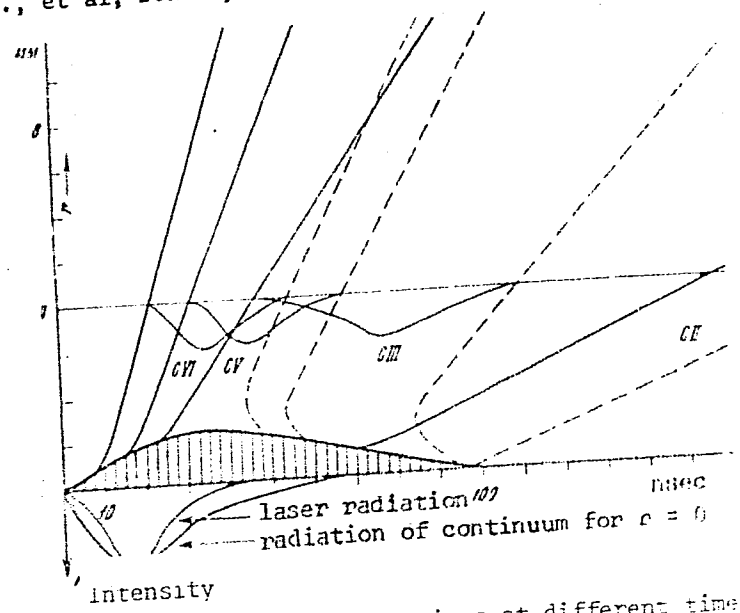
USSR

BASOV, N. G., et al, Doklady Akademii Nauk SSSR, Vol 192, No 6, 21 Jun 70, pp 1248-1250



r-t diagram of the dispersion of carbon ions at different times. Oscillograms at the distance r = 4 mm are given. The shaded

UNCLASSIFIED PROCESSING DATE--02OCT70

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TITLE--THERMODYNAMIC FUNCTIONS OF SIX SUB2 YZ TYPE HALOSILANES -U-

AUTHOR-(05)-MASLOV, P.G., USVYATTSEVA, T.F., BOYKO, V.S., KARETNIKOVA, N.I., YENGALYCHEV, YU.S.

COUNTRY OF INFO--USSR

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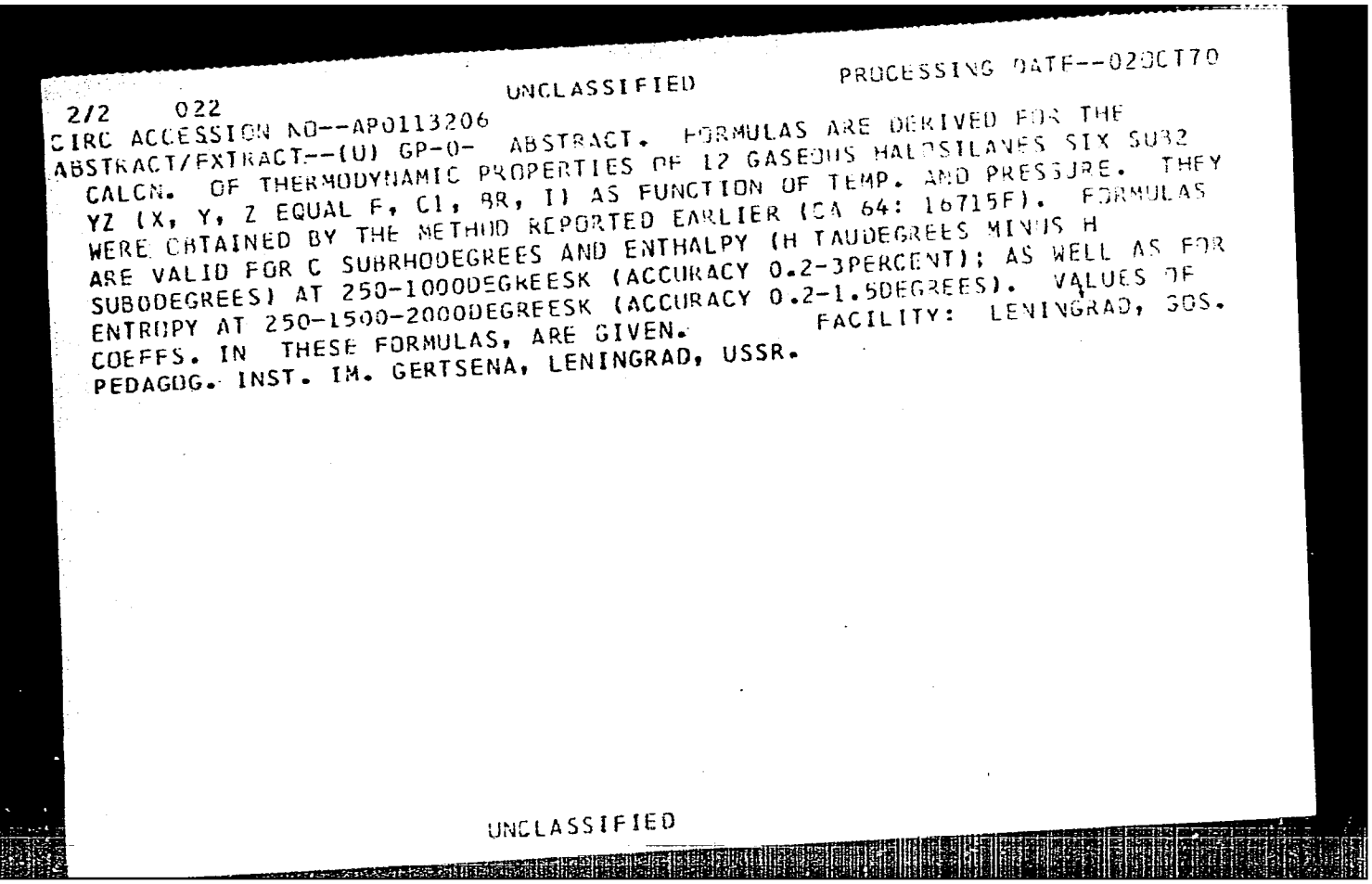
UNCLASSIFIED



UNCLASSIFIED PROCESSING DATE--02OCT70

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CIRC ACCESSION NO--AP0113206

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FORMULAS ARE DERIVED FOR THE CALCN. OF THERMODYNAMIC PROPERTIES OF 12 GASEOUS HALOSILANES SIX SUB2 YZ (X, Y, Z EQUAL F, CL, BR, I) AS FUNCTION OF TEMP. AND PRESSURE. THEY WERE OBTAINED BY THE METHOD REPORTED EARLIER (CA 64: 16715F). FORMULAS ARE VALID FOR C SUBRHODEGREES AND ENTHALPY (H TAUDEGREES MINUS H SUBODEGREES) AT 250-1000DEGREESK (ACCURACY 0.2-3PERCENT); AS WELL AS FOR ENTROPY AT 250-1500-2000DEGREESK (ACCURACY 0.2-1.5DEGREES). VALUES OF COEFFS. IN THESE FORMULAS, ARE GIVEN. FACILITY: LENINGRAD, GOS. PEDAGOG. INST. IM. GERTSENA, LENINGRAD, USSR.

UNCLASSIFIED

Vector Studies

USSR

VOTYAKOV, V. I., GRIBOV, V. A., RYTIK, P. G., and BOYKO, V. I., Belorussian Scientific Research Institute of Epidemiology and Microbiology, Minsk

"Device for Feeding and Natural Infection of Insects"

Moscow, Otkrytiya, Izokreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 9, 1973, p 102

Translation: The device for feeding and natural infection of insects, consisting of two chambers (one of them open, the other one closed) divided by a membrane and having an opening for supplying the donor's blood, differs in that there is a bolt (for instance a ball valve) installed in the channel for serving blood and that the open chamber is provided with a netted ring, which is fixed by a clamping mount, in order to increase the safety of serving donor's blood and to prevent dissemination of the insects used in the experiment.

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USSR

UDC 669.71.011.56(088.8)

GEORGIYEVSKIY, YU. I., ZARECHNYY, V. F., BALASHOV, I. I., MANOKHA, I. YE., and BOYKO, V. M.

"Device for Calculating Anode Effects During Automated Control of the Operation of Aluminum Electrolyzers"

USSR Author's Certificate No 276442, Filed 13 Sep 67, Published 12 Oct 70 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4G121P)

Translation: The device consists of a regulator and a unit for disconnecting the electrolyzer from the regulator at the anode effect time. In order to prevent anode effects and the consequences on the regulation process, a series-connected anode gas composition sensor and differentiator are introduced into the device. The differentiator output is connected to the electrolyzer regulator control system.

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USSR

UDC 669.71.011.56(088.8)

GEORGIYEVSKIY, YU. I., ZARICHNYY, V. F., BALASHOV, I. I., MANOKHA, L. YE., and BOYKO, V. N.

"Device for Calculating Anode Effects During Automated Control of the Operation of Aluminum Electrolyzers"

USSR Author's Certificate No 276442, Filed 13 Sep 67, Published 12 Oct 70 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4G121P)

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USSR

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UDC 550.837.73

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KAMENETSKIY, F. M., YAKUBOVSKIY, YU. V., MIZYUK, L. YA., VAKUL'SKIY, A. A., TIMOFEYEV, V. M., MAKAGONOV, P. P., LUTSYSHIN, A. S., BOYKO, V. P.

"Device for Inductive Aeroelectric Exploration by the Transient Process Method"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 16, 8 May 70, p 61, Patent No 270123, Filed 19 Apr 65

Translation: 1. This Author's Certificate introduces a device for inductive aeroelectric exploration by the transient process method. The device comprises a pulse generator, a generator circuit, a receiving element, a control unit, amplifiers, commutators, storage elements, and a recording unit. It is distinguished by the fact that in order to improve the noiseproofness of transient process measurements in flight, the generator circuit is executed in the form of a system made up of the basic generator circuit placed between the aircraft and the receiving element at equal distances from both and two auxiliary circuits arranged one directly on the hull of the aircraft and the other, on the case of the receiving element.

2. A second device like item 1 is introduced, but it is distinguished by the fact that in order to obtain the required power in the basic generator circuit directly from the low-voltage on-board network and also to increase the steepness of the pulse fronts, the basic generator circuit is executed in

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KAMENETSKIY, F. M.,et al., Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 16, 8 May 70, Patent No 270123, Filed 19 Apr 65

the form of several sections commuted by individual switches with a common control circuit.

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USSR UDC: 621.373.44-525

BIRMAN, A. I., BOYKO, V. T., Central Scientific Research Institute of Large-Scale Automation

"A Pneumatic Generator of Exponential Functions"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, 1970, No 25, Soviet Patent No 278209, class 42, filed 23 May 69, published 5 Aug 70, p 130

Translation: This Author's Certificate introduces a pneumatic generator of exponential functions which contains reference pressure sources, contacts controlled by a square pulse generator, a laminar choke, and a capacitor. As a distinguishing feature of the patent, precision is improved by using an additional capacitor which is equal in value to the first and is connected to it through the choke.

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USSR

UDC 621.791.75

SMIRNOV, A. P., PAVLOV, A. S., KOLESNENKOV, A. S., and BOYKO, V. V.

"Semiautomatic Shot-Arc-Welding of VNS5 High-Strength Steel With Consumable Electrode in Gaseous Mixtures"

Kiev, Avtomaticheskaya Svarka, No 4 (241), Apr 73, pp 70-71

Abstract: The influence of the composition of gaseous protective mixtures on the strength of VNS5 stainless steel joints welded with consumable electrodes was investigated at the Gor'kiy Aviation Plant. Effects of various mixtures on dimensions of the weld form were studied on microsections of cylinders, welded on 5-mm-thick plates, in mixtures of pure Ar, Ar+He, Ar+O_2, and Ar+CO_2. Qualitatively best results were found on specimens welded in Ar+He. This is achieved as the result of the high burning stability of the arc, its high thermal energy, and the good fluidity of the metal bath. Specimens welded in pure Ar had lower strength, specimens welded in Ar+CO_2 possessed the lowest plasticity, and specimens welded in Ar+O_2+CO_2 showed the smallest angle of bend. Mixes of Ar+CO_2 and Ar+O_2 are not recommended for welding VNS5 steel. One figure, two tables, one bibliographic reference.

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USSR UDC: 543.4:082.025.4

BOYKO, V. V., KAABAK, M. Ya.

"Classification of Analytic Methods, Instruments and Measurement Systems for Optical Composition Analyzers"

Optich. i Titrometrich. Analizatory Zhidk. Sred [Optical and Titrometric Analyzers for Liquid Media], Reports of All Union Conference, 1971, Part 1, Tbilisi, 1971, pp 3-9 (translated from Referativnyy Zhurnal Metrologiya i Izmeritel'naya Tekhnika, NO 2, 1972, Abstract No 2.32. 1088 by V. S. Krasnova)

Translation: It is pointed out that the analytic methods and instruments used at the present time can be looked upon as a two-dimensional set, in which each instrument and each method can be characterized by the method of physical-chemical conversion of the specimen and physical parameters determined. A general system for a composition analyzer is suggested, encompassing titrometric and optical analyzers with direct and differential methods of measurement, with open and closed tracking systems, with the feedback signal sent to the first or intermediate measuring circuits of the converter. Composition analyzers can be used for regulation of processes of physical and chemical conversions of specimens in specimen analyzer-specimen conversion device systems with feedback. Optical composition analyzers

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USSR

UDC: 543.4:082.025.4

BOYKO, V. V., KAABAK, M. Ya., Optich. i Titrometrich. Analizatory Zhidk. Sred [Optical and Titrometric Analyzers for Liquid Media], Reports of All Union Conference, 1971, Part 1, Tbilisi, 1971, pp 3-9 (translated from Referativnyy Zhurnal Metrologiya i Izmeritel'naya Tekhnika, No 2, 1972, Abstract No 2.32.1088 by V. S. Krasnova)

include devices for determination of the optical parameters regardless of the presence of physical-chemical converters and feedback. The measuring system of an optical analyzer can be characterized by the number of spectral intervals and radiation flexes, measurement method, type of tracking system and modulation. 4 biblio refs.

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Acc. Nr: AP0048579 Abstracting Service: CHEMICAL ABST. 5/70 Ref. Code: 4R0181

B

94470q Free-path length of current carriers in molybdenum. Boiko, V. V.; Gasparov, V. A. (Sukhum. Fiz.-Tekh. Inst., Sukhumi, USSR). *Fiz. Tverd. Tela* 1970, 12(1), 310–12 (Russ). The radio-frequency size effect method was used to det. the anisotropy of free path length. The deriv. with respect to magnetic field of the amplitude of the size-effect line of plane-parallel plates of Mo was plotted vs. their thickness, at 3.5 MHz and 4.2°K. From the slope of this plot, the free path length can be detd.

A. Libackyj

I B

REEL/FRAME
19800304

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USSR UDC: 621.396.677.7

OLEYNIKOV, V. N. and BOYKOV, V. V.

"Broad-Band Slotted Waveguide Exciter of Circularly Polarized H_{11} Waves"

Moscow, Radiotekhnika i Elektronika, No 5, 1970, pp 1080-1081

Abstract: This communication describes a slotted waveguide for exciting waves in a 42% range with a residual ellipticity factor of 1.015. It consists of a primary waveguide of rectangular cross section and a secondary circular waveguide interconnected by three narrow slots. To obtain minimum ellipticity the slots are set into the rectangular waveguide at definite angles to each other, and to preclude E_{01} oscillations, the slots are set along the radii of the circular guide cross section. The authors develop the theory of the exciter and assert that experiments they performed on 12 waveguide sections prove their theory correct.

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USSR

UDC: 8.74

BELONOZHKO, P. A., BOYKO, Ye. I., DUPLISHCHEV, A. M., SERYY, Ye. A., editorial staff of "Avtomatika i Vychisl. Tekhnika" AN LatvSSR

"A Device for Solving Difference Equations"

Riga, Ustroystvo dlya resheniya raznostnykh uravneniy (cf. English above), 1972, 13 pp, ill. bibl. of 2 titles (manuscript deposited in VINITI, No 5197-72 Dep. from 8 Dec 72) (from RZh-Kibernetika, No 7, Jul 73, abstract No 7V586 Dep. by the authors)

Translation: An analog-digital complex can be used to study digital automatic control systems most completely. However, such a system is an extremely complicated technical device which is not always accessible to the researcher. The paper describes a device which has been developed and technically realized to be used jointly with an analog computer to simulate the operation of a digital filter described by a linear difference equation. The device incorporates step switches and can be used jointly with the MPT-9 analog computer to solve linear difference equations. Attachment to the given type of model and the order of the equations to be solved are not unique.

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Plant Pathology

USSR UDC 632.4:633.11:582.285.2(47+47)

LESOVOY, M. P., FEDOROVA, V. A., SHKOLENKO, V. I. [illegible], B. A., SHOPINA, V. V., IBRAGIMOV, G. R., ARENDOV, S. A., [illegible], N. I., MAKONKOVA, A. N., PERESYPKIN, V. F., ZOYKO, Yu. I., SHAVARINA, Z. A., CHUMAKOV, A. Ye., YANENKO, Z. I., PAYCHADZE, L. V., and EL'CHINAYEV, A. A., All-Union Institute of Plant Protection, Ukrainian Institute of Plant Protection, Ukrainian Agricultural Academy, Azerbaydzhan Institute of Agriculture, Central Asian Institute of Plant Pathology, and Kazan' Institute of Plant Protection, Georgian Institute of Plant Pathology

"Race Formation in Puccinia triticina Eriks. and P. striiformis West. in the USSR"

Leningrad, Mikologiya i Fitopatologiya, No 6, 1972, pp 428-434

Abstract: Study of the causative agents of orange leaf and stripe rusts of wheat in different parts of the Soviet Union and some other European countries showed that, despite the great variety of races, only a few are responsible for epiphytotics. The main races are fairly constant from year to year. This stabilization is due to the fact that that more than 90% of all the regionalized wheat varieties in the USSR are susceptible to all races of the pathogens. The racial composition of the pathogens in the USSR is similar to that occurring elsewhere in Europe because of the exchange of original forms and use of the

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USSR

LESOVOY, M. P., et al., Mikologiya i Fitopatologiya, No 6, 1972, pp 428-434

same components in breeding wheat varieties. The appearance of new races and biotypes and changes in their virulence are the result of mutation, heterokaryosis, resistant varieties, and sexual hybridization.

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RAN/ / R-760/ S-XXI-73
Dec 72

BOYKO, Yu. I.

Nikiforov, Yu. N., V. A. Yanushkevich, and A. V. Sandulova. Change in electrical properties of p-Si crystal whiskers from the action of giant laser pulses. FiKhOM, no. 3, 1972, 132-134.

Laser-induced change in the resistivity ρ of p-Si whiskers is described. The whiskers were grown along the [111] axis, had a hexagonal cross section, and ranged in length from 3 to 7 mm. Specimens were exposed to 50 nsec giant pulses from a ruby laser, with the laser beam normal to the crystal axis. Impact densities were varied over several tens of joules/cm^2, up to the damage threshold which was in the range of 35 - 45 j/cm^2. The data are presented as resistivity variation $\Delta R/R_0$ in exposed specimens as functions of whisker geometry, ambient temperature and initial ρ. Typical results at an exposure ≈ 22 j/cm^2 show a sharp rise in R by about 12-15%, followed by an exponential decay back to about the initial value, at a time constant ≅20 milliseconds. Of the possible mechanisms considered for the alteration effect (photoeffect, crystal heating, piezoeffect, defect formation) it is shown that point defect formation is the most probable factor. Defect levels, estimated to reach 10^{17}/cm^3, were effectively annealed out in all cases in 30 milliseconds or less.

Boyko, Yu. I., and A. K. Yemets. Study of laser self-focusing in alkali-halide single crystals, according to data on shift of the damage center. DAN, v. 206, no. 2, 1972, 319-322.

Experimental results are described of laser damage phenomena in KCL and KBr crystals, with the object of determining the

the molecular strength; accordingly, destruction was noted along the bonds well before molecular destruction. Molecular destruction can be caused by both heat and light. The wavelength of laser radiation is such that at low intensities unstressed polymer molecules do not absorb the waves; but internal destruction does take place and cracks are observed. The aggregate structure of the substance plays an important role; e.g. the less the aggregate size, the greater the amount of cracks in polymers. The investigations show that organic glass and other amorphous polymers contain hyper-molecular structures. Figure 1 shows the micro-structure of a plexiglass.

Geguzin, Ya. Ye., A. K. Yemets, and Yu. I. Boyko.
Lowered optical strength of transparent solids with macro-scopic defects. FTT, no. 5, 1972, 1565-1566.

An experiment is briefly described which attempted to correlate the degree of porosity in glass with its optical strength σ in laser applications. The case considered assumes that the characteristic linear dimension of the pore is greater than laser wavelength λ; in such cases for glass or ionic crystals, as much as 70% of light incident on thepore may be reflected, resulting in interference with the transmitted beam and generation of thermal damage centers. Tests to show this effect were done with a silicate glass containing a dispersed powder, sintered to form a porous medium with pore size $\approx$ 5 microns and a mean pore spacing of 30 microns.

USSR

BOYKO, Yu. I., and LIBENSON, A. A.

"Thermal Self-Focusing of Laser Radiation in Single Alkaline-Halide Crystals"

Leningrad, Fizika Tverdogo Tela, Vol 13, No 2, February 1971, pp 656-658

Abstract: The experimental procedure and results of measuring the value of $(dn/dT)_0$ (the increase in index of refraction with an increase in temperature) in a wide temperature range for a number of single alkaline-halide crystals are presented in this paper. These measurements are compared with the corresponding values of Δ, with the self-focusing condition assumed to have the form

$$\frac{dn}{dT} = \left(\frac{dn}{dT}\right)_0 + \Delta > 0: \qquad (1)$$

where dn/dT is the resultant value of the derivative of the index of refraction with respect to temperature, $(dn/dT)_0$ is the derivative of the index of refraction with respect to temperature measured under equilibrium conditions, and

$$\Delta = \frac{2}{3}\ \alpha[1 - 2\nu/(1 - \nu)]\ (\rho(\partial n/\partial p)_T$$

USSR

BOYKO, Yu. I., and LIBENSON, A. A., Fizika Tverdogo Tela, Vol 13, No 2, February 1971, pp 656-658

(α is the coefficient of thermal expansion, ρ is the density of the medium, ν is the Poisson coefficient). Conditions are discovered under which relation (1) is satisfied: that is, the occurrence of the thermal self-focusing effect is possible. Data are presented for KCl, NaCl, and KBr crystals, and an equation is derived which characterizes the efficiency of occurrence of the self-focusing effect. It is pointed out that explanation of the behavior of $(dn/dT)_0$ as a function of temperature requires consideration not only of the thermal expansion but also the variation with temperature of the molar polarizability.

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USSR

UDC[621.362:538.4]-16:533.9.083

BOYKO, YU.V., CHEMERIS, V.T.

"Movement Of Electrical Arc In Transverse Magnetic Field"

V sb. Teplotekhn.probl.pryamogo preobrazov.energii (Heat-Engineering Problems Of Direct Energy Conversion--Collection Of Works), Issue 2, Kiev, "Nauk.dumka," 1971, pp 95-102 (from RZh--Elektrotekhnika i energetika, No 12, Dec 1971, Abstract No 12A186)

Translation: The paper presents a scheme, a description of the arrangement of an experimental installation, the peculiarities of a system of probe measurements, and the results of a study of the movement of an electrical arc in a magnetohydrodynamical channel with argon and argon with an additive of potassium, in a transverse magnetic field. A diagram is presented of the distribution of the speeds of motion of the arc with respect to the length of the channel as well as the scheme of movement of the arc with respect to the electrodes. 4 ill. 4 ref. [In-t el-dinamiki AN USSR, Kiyev--Institute Of Electrodynamics AS UkrSSR, Kiev]

1/1

USSR

UDC 513.88

BOYKOV, I. V., Kazan' State University

"Approximate Solution of Singular Integral Equations"

Moscow, Matematicheskiye Zametki, Vol 12, No 2, Aug 72, pp 177-186

Abstract: The article considers an approximate solution of the singular integral equation

$$Kx \equiv a(t)x(t) + \frac{b(t)}{\pi i}\int_{\gamma}\frac{x(\tau)\,d\tau}{\tau - t} + \frac{1}{2\pi i}\int_{\gamma}\frac{h(t,\tau)\,x(\tau)}{|\tau - t|^{\delta}}\,d\tau = f(t); \quad (1.1)$$

where γ is a unit circle with the center at the origin; the functions $a(t)$, $b(t)$, $h(t,\tau)$, $f(t) \in C_{2\pi}$, $\delta < 1$. The approximate

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USSR

BOYKOV, I. V., Matematicheskiye Zametki, Vol 12, No 2, Aug 72, pp 177-186

solution is sought in the form of the polynomial

$$\tilde{x}(t) = \sum_{k=-n}^{n} a_k t^k,$$

where coefficients $\{\alpha_k\}$ are determined from a system of linear algebraic equations written in operator form as follows:

$$\tilde{K}\tilde{x} \equiv P[a(t)\tilde{x}(t) + \frac{b(t)}{\pi i}\int_\gamma \frac{\tilde{x}(\tau)\,d\tau}{\tau - t} + \\ + \frac{1}{2\pi i}\int_\gamma P_1[h^*(t,\tau)\tilde{x}(\tau)]\,d\tau] = P[f(t)], \quad (1.2)$$

USSR

BOYKOV, I. V., Matematicheskiye Zametki, Vol 12, No 2, Aug 72, pp 177-186

and a substantiation of the method is given. The results are used to substantiate an approximate solution of the singular integral equation

$$Kx \equiv a(t)x(t) + \frac{b(t)}{\pi i}\int_{\gamma}\frac{x(\tau)\,d\tau}{\tau - t} + \\ + \frac{1}{2\pi i}\int_{\gamma}\frac{h(t, \tau, x(\tau))}{|\tau - t|^{\delta}}\,d\tau - f(t) = 0 \quad (2.3)$$

by means of a modification of the method of minimum errors.

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USSR UDC:621.438.018-253.5:621.9.015

PANKOV, O.M., BOYKOV, O.I. and MILITONOV, G.V.

"Effect of Surface Finish and Tolerances of the Turbine Blade's Working Part on the Effectiveness of Gas Turbine Installation"

Moscow, Sb. Gasoturbin. i Kombinir. Ustanovki (Symposium on Gas Turbine and Combined Installations), 1971 (1972), pp 255-260 (from Referativnyy Zhurnal - Turbostroyeniye, 1973, Abstract No 3.49.157)

Translation: The present standards require the surface finish of the blades to be ▽ 8 - ▽9. It is pointed out that this requirement is unnecessarily strict and results in increased blade cost. Operating experience with gas turbine installations by foreign firms confirms the conclusion that blade surface finish over ▽ 6 is not required. It is pointed out that it is necessary to define clearly the section of the blade surface to which the standards apply.
2 illustrations. 9 tables. 2 references.

1/1

USSR

UDC: 620.10

BOYKOV, V. N., Candidate of Technical Sciences, Docent, BOYTSOV, Yu. I., Senior Instructor, MALININ, N. N., Doctor of Technical Sciences, Professor, Moscow Higher Technical Academy imeni N. E. Bauman

"Investigation of Short-Term Creep of Boiler Steel"

Moscow, Izv. VUZov: Mashinostroyeniye, No 9, 1972, pp 9-12

Abstract: The paper presents the results of a study of the short-term creep of 12Kh1MS boiler steel at 1150°C and initial stresses from 102 to 198 kg/cm^2. The tests were done on cylindrical specimens with working section 10 mm in diameter and 100 mm long on the MP-12000M creep testing machine. The heating rate was about 15°C per minute with holding for a given cycle of one hour. An EPP-09M potentiometric chart recorder was used for continuous temperature monitoring. Deviations from the planned temperature were no more than ±0.5% along the working section. Relative loading error was ±1%. Deformations were continuously recorded by another EPP-09M potentiometer, and by a voltage divider mounted on the strain gauge of the tester. The strain gauge registered deformations up to 12%. The specimens were chrome-plated to prevent scale formation. An averaged creep curve was plotted on each stress level from test data for three

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BOYKOV, V. N. et al., Izv. VUZov: Mashinostroyeniye, No 9, 1972, pp 9-12

specimens. Deviations from the average did not exceed 15%. The experimental data are compared with various theories, and it is found that the theory of hardening gives curves which match best with the experimental creep curves.

2/2

USSR UDC: 681.3

BOYKOV, V. N., KRENDEL', Yu. M., RABINOVICH, V. I., TROFIMOV, O. Ye., SHUL'TS, V. P.

"On Calculating the Precision of Digital Measuring Instruments"

V sb. Teoriya i praktika ispol'z. sredstv tekhn. kibernetiki. Kn. 1 (Theory and Practice in Utilizing the Facilities of Technical Cybernetics--collection of works. Book 1), Novosibirsk, 1970(1971), pp 94-99 (from RZh-Matematika, No 11, Nov 71, Abstract No 11V786)

Translation: The authors consider the effect which improper operation of flip-flops and comparison devices has on the accuracy of a digital device based on the method of binary sweep balancing. In order to explain "in pure form" the nature of the effect which these elements have on the operating precision of the device, a separate analysis is made: for instance, in studying the influence of incorrect flip-flop operation, the comparison device is first assumed as ideal, then real. For the sake of definiteness, distribution of the measured quantity X is assumed to be uniform, and the average modulus of the error is taken as the quality criterion for accuracy of the device. It is noted that all results can be recorded in general form or obtained in the same way for specific distributions of X with the use of many other metrological criteria; e. g., variance or mathematical expectation of the error, etc. V. Mikheyev.

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UDC: 681.3

USSR

BOYKOV, V. N., KRENDEL', Yu. M., RABINOVICH, V. I., TROFIMOV, O. Ye., SHUL'TS, V. P.

"On Calculating the Accuracy of Digital Measuring Instruments"

V sb. Teoriya i praktika ispol'z. sredstv tekhn. kibernetiki. Kn. 1 (Theory and Practice in Using the Facilities of Technical Cybernetics. Book 1--collection of works), Novosibirsk, 1970(1971), pp 94-99 (from RZh-Kibernetika, No 11, Nov 71, Abstract No 11V786)

Translation: The authors consider the effect which improper operation of the flip-flops and the comparison unit has on the accuracy of a digital device based on the method of binary sweep balancing. In order to explain the nature of the effect which these elements "in pure form" have on the accuracy of the device, a separate analysis is made: for instance in studying the effect of improper operation of the flip-flops, the comparison unit is first assumed to be ideal, and then real. It is assumed for the sake of definiteness that the distribution X of the measured quantity is uniform, and the average absolute value of the error is used as the cri-

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BOYKOV, V. N. et al., Teoriya i praktika ispol'z. sredstv tekhn. kibernetiki. Kn. 1, Novosibirsk, 1970(1971), pp 94-99

terion of accuracy of the instrument. It is noted that all the results may be written in general form or derived in the same way for distributions X using many other metrological criteria (variance of the error, mathematical expectation of the error, etc.). V. Mikheyev.

2/2

USSR

UDC 51.621.391

BOYKOV, V. N.

"Estimates of Differential Entropy of Random Quantities with Limited Probability Distribution Density Function Derivative Modulus"

Veroyatnostn. Metody v Izmerenii i Kontrole. Vyp. 2. [Probability Methods in Measurement and Testing, No. 2 -- Collection of Works], Novosibirsk, Nauka Press, 1970, pp 45-50 (Translated from Referativnyy Zhurnal Kibernetika, No. 4, April, 1971, Abstract No. 4 V498 by V. Prelov).

Translation: An expression is produced for the minimum differential entropy of limited random quantities having distribution density, the derivative of which is limited by a certain constant.

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1/2 029 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--BROAD BAND SLOTTED WAVEGUIDE EXCITER OF CIRCULARLY POLARIZED H SUBII WAVES -U-

AUTHOR-(02)-OLEYNIKOV, V.N., BOYKOV, V.V.

B

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, RADIOTEKHNIKA I ELEKTRONIKA, NO 5, 1970, PP 1080-1081

DATE PUBLISHED-------70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--CIRCULAR WAVEGUIDE, RECTANGULAR WAVEGUIDE, WAVEGUIDE PROPAGATION, EXCITATION ENERGY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3005/0615 STEP NO--UR/0109/70/000/005/1080/1081

CIRC ACCESSION NO--AP0132775

UNCLASSIFIED

2/2 029 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0132775

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THIS COMMUNICATION DESCRIBES A SLOTTED WAVEGUIDE FOR EXCITING WAVES IN A 42PERCENT RANGE WITH A RESIDUAL ELLIPTICITY FACTOR OF 1.015. IT CONSISTS OF A PRIMARY WAVEGUIDE OF RECTANGULAR CROSS SECTION AND A SECONDARY CIRCULAR WAVEGUIDE INTERCONNECTED BY THREE NARROW SLOTS. TO OBTAIN MINIMUM ELLIPTICILITY THE SLOTS ARE SET INTO THE RECTANGULAR WAVEGUIDE AT DEFINITE ANGLES TO EACH OTHER, AND TO PRECLUDE E SUB01 OSCILLATIONS, THE SLOTS ARE SET ALONG THE RADII OF THE CIRCULAR GUIDE CROSS SECTION. THE AUTHORS DEVELOP THE THEORY OF THE EXCITER AND ASSERT THAT EXPERIMENTS THEY PERFORMED ON 12 WAVEGUIDE SECTIONS PROVE THEIR THEORY CORRECT.

UNCLASSIFIED

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002200430007-3"

1/2 020 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--EVALUATION OF THE METHODS OF SURGICAL TREATMENT OF PEPTIC ULCER -U-

AUTHOR-(02)-KOLOMIYCHENKO, M.I., BOYKOV, YA.P.

COUNTRY OF INFO--USSR

SOURCE--KHIRURGIYA, 1970, NR 6, PP 16-23

DATE PUBLISHED--------70

SUBJECT AREAS--BICLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--SURGERY, DIGESTIVE SYSTEM DISEASE, STOMACH, DUODENUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3002/1771 STEP NO--UR/0531/70/000/006/0016/0023

CIRC ACCESSION NO--AP0129139

UNCLASSIFIED

2/2 020 UNCLASSIFIED PROCESSING DATE--30OCT70
CIRC ACCESSION NO--AP0129139
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ARTICLE GIVES AN ASSESSMENT OF DIFFERENT METHODS OF SURGICAL TREATMENT OF GASTRODUODENAL ULCER ON THE BASIS OF CLINICAL DATA FOR THE PERIOD BETWEEN 1969-1969. RESECTION OF THE STOMACH IS DEEMED AS THE MAIN METHOD OF SURGICAL TREATMENT OF GASTRIC PEPTIC ULCERS BASING UPON THE RESULTS OF 542 OPERATIONS FOR GASTRODUODENAL ULCERS. BILLROTH-1 MODIFICATIONS AND ECONOMIC RESECTIONS ARE CONSIDERED AS JUSTIFIED. IN DUODENAL ULCERS, AS A RULE, IT IS NECESSARY TO RESECT TWO THIRDS OF THE STOMACH, THIS GUARANTEES FROM THE ORIGINATION OF PEPTIC ULCER OF THE ANASTOMOSIS. IN LOW LOCATED DUODENAL ULCERS GOOD RESULTS WERE OBTAINED IN RESECTION FOR EXCLUSION. IN SUCH INSTANCES VAGOTOMY IS ALSO INDICATED. SELECTIVE GASTRIC VAGOTOMY WITH DRAINING OPERATIONS MERIT ATTENTION, HOWEVER, THEY REQUIRE FURTHER CLINICAL STUDY, ESPECIALLY AT REMOTE PERIODS. FACILITY: KAFEDRA OBSHCHEY KHIRURGII KIEV. MEDITSINSKOGO INSTITUTA.

UNCLASSIFIED

BOYKOVA, A. I.

(Cement minerals)

THE FORMATION AND STRUCTURAL TRANSFORMATIONS OF CEMENT MINERALS

[Article by candidates of Technical Sciences P. F. Kurbatov and A. I. Boykova, Vestnik Akademii Nauk SSSR, Russian, Vol 42, No 4, April 1972, pp 120-121]

Conference in Leningrad

The process of cement technology, which has permitted our country to go into first place in the world in the production of cement, is stipulated to a considerable degree by the development of investigations of processes of the formation and structural transformations of cement minerals. Those investigations form the theoretical basis of the technology of cements and, in addition, contribute to the development of such scientific disciplines as crystal chemistry, mineralogy, geochemistry, chemical kinetics, etc.

The All-Union conference held on 15-17 November 1971 in Leningrad was devoted to questions of the mechanism and kinetics of the formation of cement minerals, the crystal chemical characteristics of their structure, and their physicochemical properties. The conference was organized by the Department of Physical Chemistry and Technology of Inorganic Minerals, the Institute of Chemistry of the Silicates Imeni I. V. Grebenshchikov of the AS USSR, the Leningrad Technological Institute Imeni Lensovet and the "Gipro-tsement" (All-Union State Scientific Research and Planning Institute of the Cement Industry). Participants in its work were about 300 persons, both scientists of various specialties and production men from 25 cities of our country. Reports were heard on 70 papers were basic problems relating to anhydrous and hydrated calcium silicates and also the phases forming in the process of hydration and hardening of cements, their structural transformations, processes of the formation of mineralizers, their structural characteristics, the principal chemical characteristics of cement minerals, those [illegible], the reactivities and mechanism of the formation and hydration of minerals, the influence of impurities on those processes, and structure formation during hardening.

In a report on structural and crystal chemical characteristics of minerals N. V. Belov examined the role of silicon atoms in the process of

Hydraulic and Pneumatic

USSR UDC 627.81:551.48(47+57)

BOYKOVA, K. G., SHEVCHENKO, G. N., and LEBEDEV, V. A.

"Principles of Hydrologic Calculations When Planning Engineering Measures to Protect National Economic Projects in the Far East from Flooding (1967)"

Izuch. i ispol'z vodn. resursov SSSR. 1966-1967 -- V sb. (Study and Use of USSR River Resources. 1966-1967 -- Collection of Works), Moscow, Nauka Press, 1970, p 74 (from RZh-Elektrotekhnika i Energetika, No 2, Feb 71, Abstract No 2 D20)

Translation: This article contains a study of the problem of expediency of applying the time lag constant (for the rise and fall period) in calculations of high rain floods causing significant flooding of shore areas. One of the problems was to determine the possible decrease of storage of the Zeyskiy and Dagmarskiy Hydroelectric Power Plant Reservoirs and how to avoid significant flooding in the tailrace in doing this. The obtained scheme for analyzing the flood hydrograph in the outlet considering the natural transformation offers the possibility of sufficiently well-founded calculation of the drop in height of the flood wave as the result of regulating the runoff from reservoirs and channel capacity. An example of calculating the inflow and transformation of flood waters by channel capacity and reservoirs considering

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USSR

BOYKOVA, K. G., et al., Izuch. i ispol'z vodn. resursov SSSR. 1966-1967 -- V sb. (Study and Use of USSR River Resources. 1966-1967 -- Collection of Works), Moscow, Nauka Press, 1970, p 74 (from RZh-Elektrotekhnika i Energetika, No 2, Feb 71, Abstract No 2 D20)

the flood formation centers is presented. The ordinates of the lag curves for τ and n from 2 to 12 were calculated on the Promin' computer. Calculations of the maximum flood runoff are presented.

2/2

BOYKOVA, O. I.

Space Physiology

SO: JPRS 53448
24 Jan 71

UDC 612.17-06:612.766.2

USSR

CHANGES IN CARDIAC ACTIVITY DURING PROLONGED RESTRICTION OF MOTOR ACTIVITY

[Article by T. N. Krupina, B. M. Fedorov, T. V. Beneviolenskaya, O. I. Boykova, V. S. Novitskaya, Ye. N. Kuz'mina, K. S. Morozov and K. S. Romanov, Moscow, Kosmicheskaya Biologiya i Meditsina, Russian, Vol 5, No 2, 1971, pp 76-81, submitted for publication 1 June 1970]

Abstract: This paper gives the results of clinical and experimental investigations of animals and human subjects conducted to study the mechanisms underlying the effect of hypodynamia on the cardiac function. Clinical investigations which involved a 120-day bedrest experiment indicated that lessened activity resulted in deterioration of the autonomic function and asthenization of the body at later stages. Cardiac changes were traced in the ECG, largely due to a reduced amplitude of the T waves in the first standard and left chest leads. Hypokinetic experiments on rabbits revealed a drastic reduction in normerutine content in the hypothalamus at early stages and an inhibition of the adrenal function at later times. Ultrastructural investigations of myocardial cells revealed focal changes in contractile elements (myofibrillar swelling), trophic formations (reduced number of cristae in mitochondria) and increased permeability of the capillary endothelium. Changes in ECG waves which are typical of hypokinetic exposure can be attributed to disturbances in cardiac regulation and trophic support of the myocardium.

Studies of the effect of hypokinesia on the human body have shown that a marked restriction of motor activity causes a number of shifts in cardiac activity and vascular tone, as well as reduced adaptability of the cardiovascular system and circulatory regulation apparatus (A. L. Myasnikov, et al.; Yu. V. Latova; G. P. Mikhaylovskiy and T. V. Benevolenskaya; V. S. Georgiyevskiy and V. M. Mikhaylov; L. I. Kakurin; A. V. Korobkov, et al.; N. K. Purerova, et al.; A. V. Beregovkin, et al.; A. D. Voskresenskiy, et al.; A. M. Genin, et al.; A. R. Kotovskaya; I. D. Pestov, et al.; T. A. Sorokin, et al.)

USSR UDC: 621.73.043

OKHRIMENKO, Ya. M., SMIRNOV, O. M., BALAKIN, V. P., BOYTSEKHOVSKIY, V. A., SHKLYAYEV, V. Ye.

"Process of Production of Long-Axis Forgings by Extension in the Superplastic State"

Kuznechno-Shtampovochnoye Proizvodstvo, No 1, Jan 73, pp 7-10.

Abstract: A process of monaxial form change in the state of superplasticity, the relationship between initial and final dimensions of the piece, kinematic plans of experimental installations and the dependence between the primary parameters of the process in the initial and stable stages are studied. The conditions of development of the state of superplasticity are also studied. Examples of products produced by this method are presented and the advantages and disadvantages are noted.

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1/2 024 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--ON THE TOXICOLOGICAL EVALUATION OF CHLORAL IN THE PROCESS OF ITS LIBERATION DURING FILLING AND POURING OF FOAM POLYURETHANS -U-

AUTHOR-(03)-BOYTSOV, A.N., ROTENBERG, YU.S., MULENKOVA, V.G.

COUNTRY OF INFO--USSR

SOURCE--GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA, 1970, NR 6, PP 26-29

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--CHLORINATED ORGANIC COMPOUND, ALDEHYDE, POLYURETHANE RESIN, TOXICITY, FOAM PLASTIC

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3003/1129 STEP NO--UR/0391/70/000/006/0026/0029

CIRC ACCESSION NO--AP0130161

UNCLASSIFIED

2/2 024 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0130161

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CHLORAL (TRICHLOROETHANAL) IS WIDELY USED IN VARIOUS BRANCHES OF INDUSTRY (DDT SYNTHESIS, PRODUCTION OF SOLID FOAM POLYURETHANS FPU ETC.) WHILE FILLING AND POURING FPU OF THE 244H AND 100-66 GRADES THE RELEASE OF CHLORAL FUMES INTO THE ATMOSPHERE IS THE BASIC SOURCE OF ENVIRONMENTAL POLLUTION. BY READILY INCORPORATING WATER CHLORAL FUMES BECOME PRACTICALLY INSTANTANEOUSLY TRANSFORMED INTO CHLORAL HYDRATE (CH) WHICH IS A COMPOUND OF MODERATE TOXICITY (WITH ITS INTRAGASTRIC INTRODUCTION TO ALBINO MICE THE LD SUB50 EQUALS 710 MG-KG AND LC SUB50 MINUS 32 MG-1). IN CHRONIC TESTS THE CH FUMES CONCENTRATION OF 0.66 MG-1 PRODUCES RETARDED WEIGHT GAIN, PHASIC CHANGES IN THE CNS EXCITABILITY AND IN THE ARTERIAL PRESSURE, LEUCOCYTOSIS AND DIMINUATION OF THE ALBUMIN GLOBULIN RATIO IN THE ANIMALS. CH FUMES CONCENTRATION OF 0,22 MG-1 PROVOKED IN THEM BUT A TENDENCY TOWARDS A SHIFT OF THE SAME VALUES. A CONCENTRATION OF 10 MG-M PRIME3 (CALCULATED TO THE VALUE OF CHLORAL) HAS BEEN APPROVED AS A MAXIMUM PERMISSIBLE ONE FOR CHLORAL FUMES AND CH. FACILITY: TSENTRAL'NYY INSTITUT USOVERSHENSTVOVANIYA VRACHEY, MOSKVA GORODSKAYA SANEPIDSTANTSIYA.

UNCLASSIFIED

BOYTSOV, V.M.

THE BEHAVIOR OF RARE-EARTH-BASED ABSORBING MATERIALS UNDER IRRADIATION

[Paper by V. P. Golubev, V. M. Boytsov, and [illegible] Scientific Research Institute for Atomic Reactors imeni V. I. Lenin, Dimitrovgrad, USSR; Dimitrovgrad, Ordena Lenina i Ordena Trudovogo Krasnogo Znameni NII atomnykh reaktorov imeni V. I. Lenina]

and control rods for fast reactors], Russian, International Working Group for Fast Reactors Specialists Meeting, Dimitrovgrad, 4-8 June 1973]

The results of an investigation of the radiation stability of pure and alloyed europium oxide, irradiated at temperatures of 500 - 600°C by an integral flux of 1×10^{22} neutrons per square centimeter are given. The dimensional and structural stabilities and compatibility with the jacket (cladding) material were studied. Conclusions were made concerning the application of the absorbents investigated in fast reactors.

1. Introduction

In fast reactors, characterized by a high density of neutron fluxes and considerable operating temperatures, the application of n,γ absorbents is very promising.

The n,γ-absorbing materials differ advantageously from the n,α-absorbents in their lack of nuclear reactions, leading to the formation of gaseous products. In connection with this, the problem of gas liberation and gas swelling is removed, and these are one of the principal radiation effects in n,α-absorbents. In n,γ-absorbents, as a consequence of the capture of neutrons, either isotopes of the initial substance are formed, or atoms of the adjacent element in the periodic system.

Boytsov, Yu. I.

SPS 53203

6-73

III-2, THE CHARACTERISTIC FEATURES OF GROWTH OF AUTOEPITAXIAL SILICON LAYERS IN A DEVICE WITH A HORIZONTALLY ARRANGED REACTOR

[Article by Yu. I. Boytsov, V. P. Gaydayenko, V. M. Kazanov, T. S. Kondrat'-yeva, M. A. Belov, Leningrad; Novosibirsk, III Simpozium po Protsessam Rosta i Sinteza Poluprovodnikovykh Kristallov i Plenok, Russian, 11-17 June 1972, p 165]

A study was made of the effect of the growth conditions on the electro-physical parameters (the thickness and specific resistance) of autoepitaxial layers of silicon. In order to measure the thickness and specific resistance, the infrared method and the method of spreading resistance were used. It was demonstrated that the autoepitaxial layers grown in the device with a horizontally arranged reaction chamber have specific characteristics of distribution of the thickness and specific resistance. Recommendations are made with respect to the application of the technological procedures and measurements for growing epitaxial layers which are uniform with respect to thickness and specific resistance.

- 170 -

USSR UDC: 620.10

BOYKOV, V. N., Candidate of Technical Sciences, Docent, BOYTSOV, Yu. I., Senior Instructor, MALININ, N. N., Doctor of Technical Sciences, Professor, Moscow Higher Technical Academy imeni N. E. Bauman

"Investigation of Short-Term Creep of Boiler Steel"

Moscow, Izv. VUZov: Mashinostroyeniye, No 9, 1972, pp 9-12

Abstract: The paper presents the results of a study of the short-term creep of 12Kh1MS boiler steel at 1150°C and initial stresses from 102 to 198 kg/cm^2. The tests were done on cylindrical specimens with working section 10 mm in diameter and 100 mm long on the MP-1200CM creep testing machine. The heating rate was about 15°C per minute with holding for a given cycle of one hour. An EPP-09M potentiometric chart recorder was used for continuous temperature monitoring. Deviations from the planned temperature were no more than ±0.5% along the working section. Relative loading error was ±1%. Deformations were continuously recorded by another EPP-09M potentiometer, and by a voltage divider mounted on the strain gauge of the tester. The strain gauge registered deformations up to 12%. The specimens were chrome-plated to prevent scale formation. An averaged creep curve was plotted on each stress level from test data for three

1/2

specimens. Deviations from the average did not exceed 15%. The experimental data are compared with various theories, and it is found that the theory of hardening gives curves which match best with the experimental creep curves.

BOYTSOV, Yu. P.

Z-11. ANOMALOUS DISTRIBUTION OF ADMIXTURES NEAR THE METALLURGICAL BOUNDARY IN EPITAXIAL SILICON n-n STRUCTURES

[Article by Yu. P. Boytsov, V. N. Prokhorov, Leningrad; Novosibirsk, III Simpozium po Protsessam Rosta i Sintezu Poluprovodnikovykh Kristallov i Plenok, Russian, 12-17 June 1977, p 177]

On the basis of the developed procedure for discovering the "metallurgical boundary" in epitaxial silicon n-n structures, a study was made of the distribution of the admixtures near the interface of the epitaxial layer and the substrate. The discovery of the "metallurgical" boundary is based on chemical etching of a skew microsection of the epitaxial structure manufactured at a small (1-10 minutes) angle [1,2]. An experiment was performed which confirms the correctness of the developed procedure. The admixture concentration was determined using measurements of the spreading resistance of the point-contact of the metal-semiconductor and the Irvin curve [3,4]. It was demonstrated that at the "metallurgical" boundary the admixture concentration is appreciably lower than the theoretical value of $N_0/2$. Mechanisms are proposed which explain this phenomenon.

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TITLE--TEMPERATURE CALCULATION IN MOTION OF A FLAT ANNULAR HEAT SOURCE IN APPLICATION TO DIAMOND DRILLING -U-

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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FIG. 1. SCHEME OF TEMPERATURE FIELD CALCULATION OF PLANE ANNULAR MOVABLE HEAT SOURCE. FIG. 2. GRAPH FOR DETERMINATION OF FUNCTION F SUB1, (A) (1 DIAMETER OF SOURCE 25 MM; 2, 20; 3, 17; 4, 12) AND F SUB2 (DELTA). S, MM-SEC; F SUB1 CM PRIME2 TIMES SEC DEGREESC-CAL; ALPHA, CAL-CM PRIME2 TIMES SEC DEGREESC; F SUB2, CM PRIME2 TIMES SEC. DEGREESC-CAL. FIG. 3. SCHEME OF TEMPERATURE CALCULATION AT END FACE OF THIN COOLIND ROD. FIG. 4. SCHEME OF GLASS DRILLING BY DIAMOND: 1, BODY OF DIAMOND DRILL: 2, DIAMOND LAYER; 3, TESTED GLASS; M SUBC, WORKING FACE OF DRILL. SUMMARY. IN THE PAPER THE METHOD OF HEAT SOURCES IS APPLIED TO SOLUTION OF THE PROBLEM ON TEMPERATURE APPEARING IN A SOLID MASSIF WITH AN ANNULAR HEAT SOURCE MOVING IN IT. THE SOLUTION RESULTS ARE SUED FOR TEMPERATURE CALCULATION IN GLASS BORING BY A DIAMOND ANNULAR DRILL. CALCULATION SCHEMES ARE SHOWN IN FIGS 1, 3, AND 4.

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"A Hybrid Arithmetic Device"

USSR Author's Certificate No 284447, filed 28 Jul 69, published 28 Dec 70 (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 10, Oct 71, Abstract No 10B382)

Translation: The invention applies to the field of computer technology and can be used for computing algebraic expressions and the values of functions in specialized computers and in hybrid computer systems. Hybrid arithmetic units are known which contain digital-analog converters, a DC amplifier, a comparator, a device for determining polarity, and switches. The conventional device has the following disadvantages. The structure of the conventional arithmetic unit is well adapted to computing sums of paired products and series but is inadequately efficient in computing sums of products of an odd number of cofactors, the values of $\sum_{i=1}^{k} a_i$ (when k exceeds the number of

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USSR

MALINOVSKIY, B. N., BOYUK, V. P., Soviet Patent No 284447

blocks of n sections), and certain other algebraic expressions. The circuitry of the device for computing different algebraic expressions is complex. In the proposed device the output of the first digital-analog converter of each conversion block is connected through a switch to the input of the DC amplifier, and the output of the second digital-analog converter of each block is connected to the input of the first digital-analog converter of the next block. This improves the accuracy of calculations and expands the functional possibilities of the device. One illustration.

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USSR UDC 519.2:62-50

BOYUN, V. P. and KOZLOV, L. G.

"Using Methods of Experimental Planning in Solving Optimal Control Problems of a Digital-Analog Computer Complex"

Kiev, Kibernet. tekhnika--Sbornik (Cybernetic Equipment -- Collection of Works), No 5, 1970, pp 93-102 (from Referativnyy Zhurnal -- Matematika, No 6, June 71, Abstract No 6V262, by Ya. Kogan)

Translation: The problem of optimal control of a system whose dynamics is described by an ordinary n-th-order differential equation is discussed. The numerical solution of this problem reduces to the problem of minimizing a function of a finite number of variables. It is proposed to employ methods of experimental planning in solving the latter. The main steps in realization of the numerical algorithm for solving this problem of optimal control for a digital-analog computer complex are described.

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USSR UDC: 681.335.82

MALINOVSKIY, B. N., BOYUN, V. P., Institute of Cybernetics, Academy of Sciences of the Ukrainian SSR

"A Device for Raising to a Power and Extracting a Root"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, 1970, No 33, Soviet Patent No 285362, class 42, filed 28 Jul 69, published 29 Oct 70, p 124

Translation: This Author's Certificate introduces a device for raising to a power and extracting a root. The unit contains series-connected first--stage digital-analog converters, a comparator with its second input connected to the output of a second-stage digital-analog converter, and a digital balancing circuit. As a distinguishing feature of the patent, the functional possibilities of the device are extended by including an operation flip-flop, exponent register, and controlled switches. The output of each first-stage digital-analog converter except the last, and the analog input of each analog-digital converter for this stage except the first, are connected through switches controlled from the exponent register to the inputs of the following digital-analog converter and the reference voltage source respectively. The digital inputs of the first-stage

USSR UDC: 681.335.82

MALIHOVSKIY, B. N. et al., Soviet Patent No 285362

digital-analog converters and the digital input of the second-stage digital--analog converter are connected through two pairs of switches controlled from the operations flip-flop to the input and output terminals of the device.

US[redacted]

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UDC 681.3.001:51

MALINOVSKIY, B. N., BOYUN, V. P., ARISTOVA, L. YE., ARISTOV, V. V.

"One Version of the Construction of a Hybrid Computer System"

Materialy. IV Resp. Nuachn Konferentsil Molodykh Issledovateley Po Sistemotekhn. T. 1 (Materials of the Fourth Republic Scientific Conference of Young Systems Engineering Researchers. Vol 1 - Collection of Works) Kiev, 1969, pp 148-150 (from Referativnyy Zhurnal Avtomatika, Telemekhanika I Vychislitel'naya Tekhnika, No 5, 1970, Abstract No 5 B23, V. G.)

Translation: Problems are discussed concerning the automation of the operation of a hybrid computer system in order to increase its productivity. The basis of the hybrid system is a high-speed digital machine, to which analog integrators are added for approximate integration and digital integrators are added for more precise integration. The digital machine in such a system translates the input information, selects the method of solution from among the analog and digital integrators, scales variables, refines the solution of the analog portion when necessary, calculates correlating functions, calculates the goal function when optimal control problems are

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MALINOVSKIY, B. N., et al., Materialy. IV Resp. Nuachn. Konferentsil Molodykh Issledovateley Po Sistemotekhn. T. 1, Kiev, 1969, pp 148-150 (from Referativnyy Zhurnal Avtomatika, Telemekhanika I Vychislitel'naya T khnika, No 5, 1970, Abstract No 5 B23, By V. G.)

solved, controls the entire computer system, and also performs the functions of storage and distribution of initial and intermediate information. It is noted that, in spite of the fact that this type of computer system is specialized for the solution of ordinary differential equations, it can perform a number of other functions as well.

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UDC 681.3.06.51

PARASOVA, N. A., BOZ, M. M.

"Factographic Information Systems with Digital Computers. Analytic Review"

Faktograficheskiye Informatsionnyye Sistemy Na Etsvm. Analit. Obzor. [English Version Above], Moscow, 1970, 190 pages (Translated from Referativnyy Zhurnal Kibernetika, No. 4, April, 1971, Abstract No. 4 V646K).

Translation: A method is suggested for classification of various information systems. A number of concrete information systems are studied using computers included in the class of factorgraphic systems, i. e., containing completely formalized description of facts, data, etc. Both the general statements and regularities in the development of the structures of the systems, and the specifics of individual systems, related to specific areas of application, are studied. Systems with flexible structure, as well as systems for processing of commercial information are most fully studied.

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